LLNL Environmental Restoration Division (ERD)
Standard Operating Procedure (SOP)

ERD SOP 4.16: ERD Lockout/Tag Program
Revision: 0

AUTHOR(S):
G. Metzger

ENVIRONMENTAL RESTORATION DIVISION
CONTROLLED COPY
_____
THIS IS A RED STAMP
ERD

APPROVALS: Date

Albert I Lamarre 4-11-00
Division Leader

Ed Folsom 4/11/00
Engineering Group Leader

CONCURRENCE: Date

Alan Dibley 4/11/00
QA Implementation Coordinator

1.0. PURPOSE

The purpose of this SOP is to satisfy the requirements of the LLNL ES&H manual, Supplement 26.13, and the Occupational Safety and Health Administration (OSHA) Control of Hazardous Energy Source, Standard 1910.147, which is more commonly known as the Lockout/Tag Standard. The Program establishes minimum requirements for lockout and tag of energy-isolating devices whenever service or maintenance is performed on equipment. Where "unexpected" energization (or startup) of the equipment or the release of stored energy could occur and possibly result in injury, these requirements shall be applied to ensure that the equipment is stopped, isolated from all potentially hazardous energy sources, and locked out and tagged before employees begin service or maintenance. Note that the term "equipment" as used in this supplement refers to machines, facility and research and development (R&D) equipment, and equipment components. Other terms used in this SOP can be found in the SOP Glossary.

2.0 APPLICABILITY

2.1 The Lockout/Tag Program applies to all LLNL personnel. It also applies to subcontractor personnel who do not have an equivalent lockout and tag program that satisfies the requirements of the Occupational Safety and Health Administration (OSHA).

In addition, the program applies to servicing and maintenance activities (including lock out and tag) that are part of a facility or program's normal operations. These include:

- Lockout and tag of the equipment.
- The removal or bypass of a guard or other safety device.
- Other activities that require a person to place his/her body into an area of the equipment where work is being performed on material (point of operation) or where an associated danger zone exists during a machine-operating cycle.

A wide variety of energy sources that may need to be locked out and tagged during servicing or maintenance of the equipment is covered under this Program. These include, but are not limited to:

- Electrical
- Hydraulic
- Pneumatic
- Mechanical
- Gravity
- Thermal
- Chemical
- Fluids and Gases
- Water under pressure
- Steam

2.2 The Lockout/Tag Program Does Not Apply to:

- Minor tool changes, adjustments, and other minor servicing activities that take place during normal operations provided that such activities are routine, repetitive, and integral to the use of the equipment and the work is performed using alternative measures that provide effective personnel protection.

- Work performed on cord and plug-connected electric equipment if exposure to the hazards of unexpected energization or start up of the equipment is controlled by unplugging the equipment from the energy source or if the plug is under the exclusive control of the employee performing the servicing or maintenance activity. Pneumatic tools may also fall into this category, provided that they can be completely isolated from their energy source.

3.0 REFERENCES

3.1 *Code of Federal Regulations*, Title 29, Part 1910.147, "The Control of Hazardous Energy (Lockout and Tagout);" and Part 1910, Subpart S, "Electrical."

3.2 Health & Safety Manual, Supplement 26.13, "LLNL Lockout and Tag Program."

4.0 DEFINITIONS

See SOP Glossary.

5.0 RESPONSIBILITIES

5.1 Division Leader

The Division Leader's responsibility is to ensure that all activities performed by ERD at the Livermore Site and Site 300 are performed safely and comply with all pertinent regulations and procedures, and provide the necessary equipment and resources to accomplish the tasks described in this procedure.

5.2 Site Safety Officer

The SSO's responsibility is to ensure the safety of ERD's ongoing operations and facilities and work performed.

5.3 Equipment Supervisors

Equipment supervisors are usually grouped into one of following three categories:

1. Equipment supervisors who are responsible for programmatic equipment (i.e., equipment owned, operated, and maintained by the program).
2. Equipment supervisors who are responsible for programmatic equipment that is maintained by Plant Engineering.
3. Equipment supervisors who are responsible for installed real property equipment that is maintained by Plant Engineering.

5.3.1 Equipment Supervisors for Programmatic Equipment

These equipment supervisors are responsible for:

- Notifying all affected employees that service or maintenance must be performed on the equipment and that it must be shut down, locked out, and tagged.

  Note: Existing e-mail notification lists, distribution lists, roster lists will satisfy this requirement.

- Ensuring that procedures outline the techniques to be used to lockout and tag sources of hazardous energy for equipment in their area of responsibility.

- Exchanging information about their respective lockout and tag procedures with outside subcontractor supervisors.
- Ensuring that their personnel understand and comply with outside subcontractors' lockout and tag procedures.
- Verifying that appropriate training has been conducted for those affected employees working in the facility. (This training is the responsibility of payroll supervision.)
- Providing personal protective equipment (PPE) (including locks and tags) to authorized employees if it is not available from the functional supervisor.
- Providing any special chains, wedges, blank flanges, key blocks, adapter pins, self-locking fasteners, or other hardware required for isolating, securing, or blocking energy sources.

5.3.2 Equipment Supervisors for Programmatic Equipment Maintained by Plant Engineering

Both the programmatic equipment supervisor and Plant Engineering equipment/functional supervisor are assigned responsibilities for these types of equipment.

Programmatic equipment supervisors are responsible for:

- Notifying all affected employees that service or maintenance must be performed on the equipment and that it must be shut down, locked out, and tagged.

  Note: Existing e-mail notification lists, distribution lists, roster lists will satisfy this requirement.
- Ensuring that procedures outline the techniques to be used to lock out and tag sources of hazardous energy for equipment in their area of responsibility.
- Ensuring that appropriate training has been conducted for those affected employees working in the facility (This training is the responsibility of payroll supervision).
- Providing any special chains, wedges, blank flanges, key blocks, adapter pins, self-locking fasteners, or other hardware required for isolating, securing, or blocking energy sources.

Plant Engineering equipment/functional supervisors are responsible for:

- Writing procedures (when required) that outline the techniques to be used to lock out and tag sources of hazardous energy for equipment in their area of responsibility.
- Notifying the equipment supervisor in the program that service or maintenance must be performed on the equipment and that it must be shut down, locked out, and tagged.

- Exchanging information about their respective lockout and tag procedures with outside subcontractor supervisors hired by Plant Engineering.
- Ensuring that their personnel understand and comply with outside subcontractors' lockout and tag procedures.
- Providing PPE to Plant Engineering authorized employees. This would include locks and tags, standard lockout adapters, and other fixtures.

5.3.3 Equipment Supervisors for Installed Real Property Equipment Maintained by Plant Engineering

Both the equipment supervisors within the facility and Plant Engineering functional supervisors are assigned responsibilities for these types of equipment.

Equipment supervisors within the facility are responsible for:

- Notifying all affected employees that service or maintenance must be performed on the equipment and that it must be shut down, locked out, and tagged.

  Note: Existing e-mail notification lists, distribution lists, roster lists will satisfy this requirement.
- Ensuring that equipment assigned to them has a Plant Engineering identification number and that the power sources are labeled.

Plant Engineering functional supervisors are responsible for:

- Writing procedures (when required) that outline the techniques to be used to lock out and tag sources of hazardous energy for equipment in their area of responsibility.
- Notifying the equipment supervisor in the facility that service or maintenance must be performed on the equipment and that it must be shut down, locked out, and tagged.
- Exchanging information about their respective lockout and tag procedures with outside subcontractor supervisors hired by Plant Engineering.
- Ensuring that their personnel understand and comply with outside subcontractors' lockout and tag procedures.
- Providing PPE to Plant Engineering authorized employees. This would include locks and tags, standard lockout adapters, and other fixtures.
- Providing any special chains, wedges, blank flanges, key blocks, adapter pins, self-locking fasteners, or other hardware required for isolating, securing, or blocking energy sources.

5.4 Functional Supervisors

Functional supervisors are responsible for:

- Ensuring that personnel understand the purpose of the Lockout and Tag Program and that they have the knowledge and skills required for the safe application, usage, and removal of energy controls.
- Ensuring and certifying that periodic inspections of the lockout and tag procedures used by authorized employees are conducted.
- Providing PPE, including locks and tags, to authorized employees.

The Lockout/Tagout board currently in ERD Field Operations building is to be under the control of the functional supervisor. This is necessary to prevent unauthorized use of the locks.

- Removing lockout and tag devices, in accordance with the procedure ERD LTP-99 (Appendix A) when the authorized employee who applied them is not available.
- Ensuring that authorized employees complete the required logs and records.

Use ERD LTP Lockout/Tagout Usage Log (Appendix B). The log is to be retained by the functional supervisor for two years.

- Ensuring that personnel understand the purpose of the Lockout/Tag Program and that they have the knowledge and skills required for the safe application, usage, and removal of energy controls.
- Maintaining an Equipment List (Attachment C) to track all equipment used in ERD that will require Lockout/Tag procedures to service and maintain.

5.5 Payroll Supervisors

Payroll supervisors are responsible for ensuring that all required training is provided to authorized employees.

5.6 Employees

5.6.1 Affected Employees

Affected employees are responsible for:

- Obtaining the training specified in Section 6.1.2 of this procedure.
- Complying with all requirements of the Lockout and Tag Program. In particular, affected employees shall not attempt to operate or energize equipment or systems that are locked out and tagged.

5.6.2 Authorized Employees

Authorized employees are responsible for:

- Performing lockout and tag procedures in accordance with the Lockout and Tag Program.
- Coordinating their activities with other authorized employees for group lockouts and for transferring lockout devices and tags when personnel and shift changes.
- Referring to the equipment supervisor's procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, understanding the hazards of the energy, and knowing the methods to control the energy.
- Participating in periodic inspections of lockout and tag procedures in use when designated by the functional supervisor.
- Obtaining the training and retraining specified in Section 6.1.1 of this supplement.

5.6 Hazards Control Department

Hazards Control is responsible for providing Course HS5245, "Lock and Tag Program."

6. PROCEDURES

6.1 Employee Training

6.1.1 Authorized Employees

Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the types and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control. This training shall include a combination of classroom education (Course HS5245) offered by Hazards Control and on-the-job training for specific equipment. NOTE: Course HS5245 is intended only for authorized employees and their functional supervisors. Retraining (HS5245-RW) is required every five years.

In addition, the functional supervisor shall ensure authorized employees understand the purpose of the LLNL Lockout and Tag Program and that they have the knowledge and skills required for the safe application, use, and removal of energy controls.

6.1.2 Affected Employees

All new employees are introduced to the LLNL Lockout and Tag Program as part of the "New Employee Safety Orientation" (Course HS0001). The equipment supervisor is responsible for ensuring that each affected employee working in the area is instructed in the purpose and use of lockout and tag procedures, including test procedures. Although this training is the responsibility of payroll supervision, equipment supervisors shall ensure the training is completed prior to authorizing lockout and tag procedures for their equipment.

6.1.3 Others

All other employees whose work operations are or may be in an area where energy-control procedures may be used shall be informed of the LLNL Lockout and Tag Program, and that they shall not attempt to operate equipment that is locked out and tagged.

6.1.4 Retraining

Authorized employees shall complete retraining (Course HS5245-RW) at least every five years. Whenever there is a change in job assignments, when a change in the equipment or processes present a new hazard, or when there is a change in the energy-control procedures, additional on-the-job training may be required. Additional retraining shall be conducted whenever a periodic inspection reveals, or the supervisor has reason to believe, that authorized employee are not using the lockout and tag procedures properly or that they lack the appropriate skills. Retraining shall re-establish personnel proficiency and introduce new or revised control methods and procedures, as necessary.

6.1.5 On-the-job Training

An OJT program shall be developed to train current and new employees as to the function and hazards of ERD treatment facilities. It shall include equipment, locations, and special procedures used to service and maintain the facilities. The OJT provided to ERD personnel shall include lockout and tag procedures, when applicable.

6.1.6 Training Records

Training records shall be maintained in accordance with the individual directorate's administrative procedures. Some training records may be entered into an LLNL training record repository. Hazards Control courses are entered into the Laboratory's Repository of Completed Courses (LROCC). Other training records are maintained locally (i.e., in the employee's department).

6.2 Locks, Tags, and Logs

6.2.1 Controlling Lockout Locks and Tags

- The functional supervisor will normally provide authorized employees the appropriate PPE, including locks and tags. However, if not provided by the functional supervisor, the equipment supervisor will provide the appropriate PPE, including locks and tags.
- The Plant Engineering functional supervisor shall provide any locks and tags that authorized Plant Engineering electricians; heating, ventilation, and air conditioning (HVAC) mechanics; plumbers. Plant Engineering shall keep their own records of locked out and tagged equipment.
- The equipment supervisor normally shall provide any special chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware required for isolating, securing, or blocking the equipment from energy sources.

The Occupational Safety and Health Administration (OSHA) requires lockout devices and associated tags to be singularly identified, durable, standardized, and substantial. To meet this requirement, only the following locks and tags shall be used at LLNL:

1. Standard Master Keyed Locks

   These locks shall be the only device used to lock out and tag equipment; when labeled with "Danger" stickers, they shall not be used for any other purpose. The locks shall have approved "Danger" stickers (Brady/Signmark Division Catalog number 65507) as shown in the Health & Safety (H&S) Manual, Supplement 26.13. Use of the "name" and "department" sections of these stickers is optional.

2. Tags

   (Form LLNL-DNR-30575-SLT, stock number 4280-71737). See the H&S Manual, Supplement 26.13. These tags conform to the requirements in Chapter 11 of the Health & Safety Manual and are to be used for all personnel safety-related lockouts. They shall have the name of the employee applying them. All other applicable information on the tag shall be supplied by that authorized employee. Each tag shall be used only once.

6.2.2 Maintaining Lockout and Tag Logs

Lockout and tag logs shall include the name of the authorized employee, the name of the equipment, the date the lock(s) and tag(s) were installed, and the date when they were removed.

The functional supervisor is responsible for ensuring that authorized employees complete the required logs and records.

6.2.3 Periodic Inspections

Functional supervisors shall periodically (at least annually) inspect the lockout and tag procedures conducted by authorized employees to ensure that these procedures and the requirements of the LLNL Lockout and Tag Program are being followed. Use the form Self-Assessment checklist (Attachment D) to conduct this inspection. Periodic inspections shall include a review of the responsibilities (as defined in the lockout and tag procedures being inspected) of the Authorized Employees (Attachment E) assigned to work on the equipment.

Functional supervisors shall perform periodic inspections or they may designate an authorized employee (other than the employee being inspected) to perform the inspections. If another authorized employee performs the inspection, the functional supervisor shall accompany him/her and observe the procedures.

The functional supervisor shall certify that the inspection was performed by identifying on the Lockout and Tag Inspection Form (Attachment F) the equipment for which the lockout and tag procedure was being utilized, the date of the inspection, the names of the employees included in the inspection, and that of the person who performed the inspection. Any deviations or inadequacies

identified during the inspection shall be corrected before further lockouts are performed.

6.3 Other Requirements

6.3.1 Single-point Lockout

For single-point lockout and tag equipment, a durable sign is to be placed on or next to the equipment indicating the location (e.g., electrical panel and breaker number) of the single energy-isolating device (Attachment G).

6.3.2 Multi-point and Special Lockout

For multi-point lockout and special procedure lockout, a durable sign is to be placed on or next to the equipment indicating the procedure number to be used to perform the lockout/tag correctly. Attachment H is an example of a Multi-point Lockout/Tag Procedure.

6.3.3 Special Lock Removal Procedure

To comply with the exception to paragraph (e)(3) for CFR1910.147, a special procedure is required when the removal of a lock by other than the authorized employee who applied the lockout/tag device is not available to remove it. Specific actions and responsibilities are required to cut or remove the lock. See Attachment A for Special Lock Removal Procedure.

6.3.4 Energy-Isolating Device Limitations

If the energy-isolating devices cannot be locked out,

1. Have a qualified person install a suitable lockout attachment on the energy-isolating device, then proceed with the lockout and tag process, or
    - If approved by the equipment supervisor and facility management, locate a lockable energy-isolating device (e.g., a panel board or switch board feeding the unlockable device) that will effectively isolate the device. Properly isolate, lock, and tag the device, or
2. Have a qualified person open (or close) the energy-isolating device (i.e., circuit breaker or valve), disconnect the wiring or piping (or insert a blank flange) from the device, and tag the wiring or piping (or blank flange) and the energy-isolating device, then proceed with the lockout and tag process. NOTE: Any tag used with disconnected wiring, as described above, or any tag used with a blank flange or physically disconnected piping shall indicate the point of disconnect or the location of the blank flange, or
    - Open (or close) and tag the energy-isolating device. Assign a person as a safety watch to ensure that the energy remains isolated for the duration of service or maintenance, then proceed with the lockout and tag process. A person assigned as a safety watch shall have no other duties, nor shall he/she leave his/her station for any reason, except when formally relieved from duty or for personal safety. A lockable energy-isolating device shall

be installed on equipment before personnel begin any service or maintenance task that might result in the unexpected release of hazardous energy. Non-lockable energy-isolating devices shall be designed or modified to accept a lockout device whenever equipment is replaced, new equipment is installed, or a major modification is performed In addition, personnel must use PPE when performing these activities.

6.3.5 Deactivation and Mothballing

During deactivation or mothballing of a facility or building, it may be necessary to secure, lock, and tag electrical, compressed air, water, or other utility or programmatic services; however, no maintenance is to be performed. Locks and tags may be installed by the facility manager, building coordinator, or by an authorized employee designated by facility management. Either a "Danger" lock and tag or a "Caution" administrative lock and tag may be used, as appropriate. In this case, a lockout and tag log is required, and the keys and log shall be held by the Facility Manager.

6.3.6 Procedures List

Refer to Attachment I for a list of ERD Lockout/Tag procedures.

7.0 QUALITY ASSURANCE RECORDS

7.1 Completed Self-Assessment Checklists

7.2 Completed Lockout/Tag Inspection Form

7.3 Completed Lockout/Tag Usage Log

7.4 Completed Lockout/Tag Program Procedure Forms

8.0 ATTACHMENTS

Attachment A—ERD LTP-99: Special Lock Removal Procedure

Attachment B—Lockout/Tag Usage Log

Attachment C—Equipment List

Attachment D—Self-Assessment Checklist

Attachment E—Authorized Personnel List

Attachment F—Lockout/Tag Inspection Form

Attachment G—ERD LTP-01: General Single-Point Lockout Procedure

Attachment H—ERD LTP-02: Multi-Point Lockout Procedure

Attachment I—Procedures List

Attachment A

Example
ERD LTP-99:
Special Lock Removal Procedure

ERD Lockout/Tag Program

Special Lock Removal Procedure

ERD LTP 99 rev. 10/26/99

This procedure is to be used when the person who installed a lock is unavailable to remove the lock. There could be a variety of reasons why the authorized person who installed the lock is not on site to remove it: These include illness, travel, vacations, unplanned leave, and after hours emergencies.

This procedure permits the Functional Supervisor to authorize the removal the lock by key or by cutting after he/she has obtained ERD Division Leader approval. The Functional Supervisor must be familiar with the normal operation of the equipment and understands the consequence of restoration to normal operation. Specifically, pump, compressor, blower, power supply start-up can result in tank overflows and similar events that can occur when the equipment is restored to service.

Also, the restoration of complicated electrical systems is considered work on energized equipment and is therefore classified as a Class 3 hazard until the system is secured. As a minimum, both an authorized employee and a co-worker shall work together when this type of work is being performed.

Details of why this procedure is being executed:

_____
_____
_____
_____
_____
_____

RESTORING EQUIPMENT TO SERVICE

- ❑ Verify that the authorized employee who installed the lock is unavailable to restore the equipment.
- ❑ Contact the ERD Division Leader and obtain permission to remove the lock.
- ❑ Notify the Equipment Supervisor and all affected employees that the equipment is to be activated.
- ❑ Verify the work is complete and the system is safe to re-energize.
- ❑ When the equipment and personnel are clear, remove all locks. The energy-isolating devices may now be operated to restore the energy to the equipment.
- ❑ Return the locks and keys to the key control rack.
- ❑ Sign the *Removed Date* portion of the Lockout/Tag log book.
- ❑ Notify the authorized employee who installed the lock that the lock has been removed and the equipment is back in service.
- ❑ File this form with other completed ERD LTP forms.

Restoration Executed by:_____ Date_____

Functional Supervisor :_____

Adapted from the LLNL Health and Safety manual supplement 26.13 dated April 26, 1996.

Attachment B

Example
Lockout/Tag Usage Log

ERD Lockout/Tag Program
Lockout/Tag Usage Log

Lock Number	Location Facility/Equipment	Authorized Employee	Procedure	Installed Date	Removed Date

Attachment C

Example
Equipment List

Facility Area	Unit	Equipment Supervisor	Equipment Type	Procedure Requirement
TFA	TFA	Anderson, Paul A.	Air stripper blower motor starter	ERD LTP 01 (SP)
		Orloff, Stephen P.	FCS enclosures	ERD LTP 01 (SP)
			North pipeline motor starters	ERD LTP 01 (SP)
			South well field motor starters	ERDLTP 06
			Variable speed drives	ERDLTP 03
			Well 415	ERD LTP 01 (SP)
			West well motor starters	ERDLTP 07
	STU-07	Silcox, Brent	Low voltage DC system	ERD LTP 01 (SP)
		Anderson, Paul A.		
TFB	TFB	Kawaguchi, Scott A.	Air stripper motor starters	ERD LTP 01 (SP)
		Anderson, Paul A.	Control systems	ERD LTP 01 (SP)
			Pipeline motor starters	ERD LTP 01 (SP)
			Variable speed drives	ERDLTP 02
TFC	TFC	Van Noy, Albert	Air stripper motor starters	ERD LTP 01 (SP)
		Silcox, Brent	Control systems	ERD LTP 01 (SP)
			HCRU	ERD LTP 04
			Pipeline motor starters	ERD LTP 01 (SP)
			Variable speed drives	ERDLTP 02
			Well 701	ERD LTP 01 (SP)
TFD-Southeast	PTU-1	Van Noy, Albert	Furnas Motor Control Center	ERD LTP 01 (SP)

Facility Area	Unit	Equipment Supervisor	Equipment Type	Procedure Requirement
		Silcox, Brent	Well pump connections	ERD LTP 01 (SP)
TFD	TFD	Kawaguchi, Scott A.		
		Anderson, Paul A.	Air stripper motor starters	ERD LTP 01 (SP)
			Control systems	ERD LTP 01 (SP)
			HCRU	ERD LTP 05
			Pipeline motor starters	ERD LTP 01 (SP)
TFD-West	PTU-6	White, Dennis M.	Furnas Motor Control Center	ERD LTP 01 (SP)
		Johnson, Benjamin J.	Well pump connections	ERD LTP 01 (SP)
TFD-East	PTU-8	Montgomery, Mark	Furnas Motor Control Center	ERD LTP 01 (SP)
		Orloff, Stephen P.	Well pump connections	ERD LTP 01 (SP)
TFD-Southeast	PTU-11	Ulrech, Jon	Furnas Motor Control Center	ERD LTP 01 (SP)
		Mitchell, Brian	Well pump connections	ERD LTP 01 (SP)
TFD-South	PTU-2	Kawaguchi, Scott A.	Furnas Motor Control Center	ERD LTP 01 (SP)
		Montgomery, Mark	Well pump connections	ERD LTP 01 (SP)
TFD-W-361	STU-01	Anderson, Paul A.	Low voltage DC system	ERD LTP 01 (SP)
		Orloff, Stephen P.		
TFE	PTU-3	Montgomery, Mark	Furnas Motor Control Center	ERD LTP 01 (SP)

Facility Area	Unit	Equipment Supervisor	Equipment Type	Procedure Requirement
		Elsholz, Allen	Well pump connections	ERD LTP 01 (SP)
TFE-Northwest	PTU-9	Kidd, Billy	Furnas motor control center	ERD LTP 01 (SP)
		Orloff, Stephen P.	Well pump connections	ERD LTP 01 (SP)
TFF		White, Dennis M.	Premises wiring	ERD LTP 01 (SP)
			Well pump connections	ERD LTP 01 (SP)
TFG-1	GTU-1	Kidd, Billy	ERD designed motor control center	ERD LTP 01 (SP)
		Orloff, Stephen P.	Well pump connections	ERD LTP 01 (SP)
TF406	PTU-5	White, Dennis M.	Furnas motor control center	ERD LTP 01 (SP)
		Johnson, Benjamin J.	Well pump connections	ERD LTP 01 (SP)
VTF518	VES	Johnson, Benjamin J.	QED motor control system	ERD LTP 01 (SP)
		Van Noy, Albert		
TF518	MTU-1	Johnson, Benjamin J.	ERD designed motor control center	ERD LTP 01 (SP)
		Van Noy, Albert	Well pump connections	ERD LTP 01 (SP)
TF5475-1	CRD-1	Kidd, Billy	Control system	ERD LTP 01 (SP)
		Elsholz, Allen	Variable speed drives	ERDLTP 03
VTF5475	VES	Johnson, Ben J.	Variable speed drives	ERDLTP 03
		White, Dennis M.		

Facility Area	Unit	Equipment Supervisor	Equipment Type	Procedure Requirement
TF5475-2	STU-05	Van Noy, Albert	AC power to battery charge	ERD LTP 01 (SP)
		White, Dennis M.		
TFE Yard	Various	Elsholz, Allen	Treatment Unit Testing	ERD LTP 01 (SP)
		Montgomery, Mark	Variable speed drives	ERDLTP 03
B438	Various	Van Noy, Albert	Treatment Unit Testing	ERD LTP 01 (SP)
		Van Fossen, John	Variable speed drives	ERDLTP 03
Hydraulic Testing	PTU-4	Silcox, Brent	Furnas Motor Control Center	ERD LTP 01 (SP)
		Kidd, Billy	Generator Operation	ERD LTP 01 (SP)
			Well pump connections	ERD LTP 01 (SP)
Hydraulic Testing	PTU-10	Mitchell, Brian	Furnas Motor Control Center	ERD LTP 01 (SP)
		Ulrech, Jon	Generator Operation	ERD LTP 01 (SP)
			Well pump connections	ERD LTP 01 (SP)

Attachment D

Example
Self-Assessment Checklist

Authorized Employee Knowledge	Yes	No
Has the authorized employee received the required training?		
Can the authorized employee demonstrate knowledge about the Lockout / Tag Program?		
Can the authorized employee demonstrate knowledge about the appropriate lock and tag devices?		
Can the authorized employee demonstrate knowledge about the location of all energy-isolating devices?		
Can the authorized employee demonstrate knowledge about any (or all) secondary or residual energies?		
Can the authorized employee demonstrate knowledge about the energy-isolation verification procedures?		
Can the authorized employee demonstrate knowledge about the necessary procedures if the equipment does not have a lockable energy-isolating device?		
Can the authorized employee demonstrate knowledge about the log-keeping requirements?		
Lock and Tag Devices		
Is there an adequate number of locks and tags?		
Are the locks properly labeled?		
Are the LLNL danger tags the correct version?		
Is a lockout and tag log available and current?		
Are copies of the applicable energy control procedures available?		
Equipment		
Are energy-isolating devices properly labeled?		
Are energy-isolating devices lockable?		
Are energy-isolating devices (other than electrical) required for lockout and tag (e.g., valves)?		
Are valves adequately identified, and are suitable locking devices available?		
Are other devices required for lockout and tag, and are these devices available?		

Attachment E

Example
Authorized Personnel List

Functional Supervisor	Authorized Employees	Formal Instruction Last Trained	Formal Instruction Training Due	OJT Training Last Trained	OJT Training Training Due
Metzger, George A.	Hall, Richard J.	02/12/99	02/12/04		
	Metzger, George A.	06/04/96	06/04/01		
	Poulter, Jay F.	08/20/96	08/20/01		
	Schnetz, Richard J.	10/07/98	10/07/03		
	Taggart, Jerry D.	01/26/98	01/26/03		
	Williams, Kenneth N.	07/11/96	07/11/01		
	Van Fossen, John H.	04/27/98	04/27/03		
	Silva, Diana K.	05/15/98	05/15/03		

Attachment F

Example
Lockout/Tag Inspection Form

ERD Lockout/Tag Program
Lockout/Tagout Inspection Form

This form shall be completed by the functional supervisor (or a designated authorized employee) who inspected the authorized employee's use of lockout/tag procedures. The functional supervisor acknowledges performance of the inspection of this form.

Date_____

1. List the equipment /machines on which the lockout/tagout procedure is being used.

   _____
   _____
   _____

2. Provide the names of the authorized employees who performed the lockout/tagout procedure for this inspection.

   _____ _____

   _____ _____

3 Identify any discrepancies uncovered by completing the Lockout/Tag Procedure Self-Assessment Checklist. List any corrective actions.

   _____
   _____
   _____
   _____
   _____

_____ _____
Signature of inspector Date

_____ _____
Signature of functional supervisor Date

Attachment G

Example
ERD LTP-01:
General Single-Point Lockout Procedure

ERD Lockout/Tag Program

General Single-Point Lockout Procedure

ERD LTP 01 rev. 10/26/99

This procedure is to be used to lockout/tagout single-point equipment used in the various treatment facilities. This procedure requires that the authorized employee be familiar with the normal operation of the equipment and understands the consequence of shutdown and maintenance. Specifically, drain-back, siphoning, tank overflow and similar events that can occur when equipment is removed from service.

REMOVING EQUIIPMENT FROM SERVICE

- ❑ Notify all affected employees that a lockout is required and the reason why.
- ❑ Shutdown equipment using normal procedures.
- ❑ Operate the switch, valve, circuit breaker, or other energy-isolating device so that the energy source is disconnected or isolated from the equipment
- ❑ Lockout the energy-isolating devices with an assigned lock.
- ❑ Check that the equipment is indeed disconnected. Use a voltmeter to check any electrical systems. Measure line to line, line to ground, and line to neutral or common. Test the voltmeter before and after the check.
- ❑ Fill out tags and attach to the switch, valve, or circuit breaker.
- ❑ Enter the requested information in the Lockout/Tag Log Book.
- ❑ Retain possession of the key.
- ❑ The equipment is now locked out.

RESTORING EQUIPMENT TO SERVICE

- ❑ Notify all affected employees that a lockout is ready to be removed.
- ❑ Verify the work is complete and the system is safe to re-energize.
- ❑ When the equipment and personnel are clear, remove all locks. The energy-isolating devices may now be operated to restore the energy to the equipment.
- ❑ Return the lock and key to the key control rack.
- ❑ Sign the *Removed Date* portion of the Lockout/Tag log book.

Adapted from the LLNL Health and Safety manual supplement 26.13 dated April 26, 1996.

Attachment H

Example
ERD LTP-02:
Multi-Point Lockout Procedure

ERD Lockout/Tag Program

Multi-Point Lockout Procedure

ERD LTP 02 rev. 10/26/99

This procedure is to be used to lockout/tag multi-point equipment that are used in the treatment facilities TFA, TFB, TFC, and TFD. This procedure requires that the authorized employee be familiar with the normal operation of the equipment and understands the consequence of shutdown and maintenance. Specifically, drain-back, siphoning, tank overflow and similar events that can occur when the equipment is removed from service.

Also, the lockout/tagout of complicated electrical systems is considered work on energized equipment and is therefore classified as a Class 3 hazard until the lockout is completed. As a minimum, both an authorized employee and a co-worker shall work together when this type of work is being performed.

REMOVING EQUIIPMENT FROM SERVICE

- ❑ Notify all affected employees that a lockout is required and the reason why.
- ❑ Shutdown equipment using normal procedures.
- ❑ Operate the switches, valves, circuit breakers, or other energy-isolating devices so that the energy source is disconnected or isolated from the equipment. Be aware that this procedure is being executed because there are multiple power sources present and requires testing, and verification of all possible sources of energy connected to the equipment being locked out.
- ❑ Lockout the energy-isolating devices with the assigned locks.
- ❑ Check that the equipment is indeed disconnected. Use a voltmeter to check any electrical systems. Measure line to line, line to ground, and line to neutral or common. Test the voltmeter before and after the check.
- ❑ Fill out tags and attach to the switches, plugs, or circuit breakers.
- ❑ Enter the requested information in the Lockout/Tag log Book.
- ❑ Retain possession of the key.
- ❑ The equipment is now locked out.

RESTORING EQUIPMENT TO SERVICE

- ❑ Notify all affected employees that a lockout is ready to be removed.
- ❑ Verify the work is complete and the system is safe to re-energize.
- ❑ When the equipment and personnel are clear, remove all locks. The energy-isolating devices may now be operated to restore the energy to the equipment.
- ❑ Return the locks and keys to the key control rack.
- ❑ Sign the *Removed Date* portion of the Lockout/Tag log book.

Shutdown Executed by:_____ Date_____

Co-worker_____

Date returned to service_____

Adapted from the LLNL Health and Safety manual supplement 26.13 dated April 26, 1996.

Attachment I

Example
Procedures List

Procedures	Name	Current Revision
ERD LTP 01	General Single-Point Lockout Procedure	10/26/99
ERD LTP 02	Multi-Point Lockout Procedure	10/26/99
ERD LTP 03	Variable Frequency Drive Lockout Procedure	10/26/99
ERD LTP 04	TFC HCRU Lockout Procedure	10/26/99
ERD LTP 05	TFD HCRU Lockout Procedure	10/26/99
ERD LTP 06	TFA South Wells Lockout Procedure	10/26/99
ERD LTP 07	TFA West Wells Lockout Procedure	10/26/99
ERD LTP 99	Special Lock Removal Procedure	10/26/99